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EXAMINER

HSIEH, SHIH WEN

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/561,696	Applicant(s) YAKURA ET AL.	
	Examiner shih-wen hsieh	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. PCT/JP04/09776.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12-22-05;10-27-06;1-8-07</u> . | 6) <input checked="" type="checkbox"/> Other: <u>IDS 10-9-08;2-3-09</u> . |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. PCT/JP04/09776, filed on July 2, 2004.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Recitation of: "wherein the cap member is opened and closed by driving of the moving means, and, **before** relative movement between the cleaning member and the liquid discharge surface while the outer face of the cleaning member is in contact with the liquid discharge surface of the liquid discharge head is caused as the cap member is closed, droplets are preliminarily discharged from the liquid discharge nozzle to the platen plate" is unclear. The unclear is:

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Examiner is uncertain as to whether the preliminary discharge is done after the cap is closed (as indicated in the hi-lighted portion above) or before (as hi-lighted above) the cap is going to be closed, or the cap is not closed yet, and the preliminary discharge is done from fig. 12D switches to fig. 12E. Please clarify.

There is NO art rejection to this claim at this time.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 14/1/6, 15/5/6 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsui et al. (US Pat. No. 5,896,143).

In regard to:

Claim 1:

Matsui et al. teach:

A liquid discharging apparatus (fig. 9) for discharging droplets from a liquid discharge nozzle (82, figs. 8 or 10) to a discharge object (8, refer to col. 13, line 44) to be discharged, the liquid discharging apparatus including a liquid discharge head (1, fig. 9 or 10) having a liquid discharge surface (81, fig. 10, refer to col. 14, line 14) provided with the liquid discharge nozzle, the liquid discharging apparatus comprising:

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a platen plate for supporting the discharge object, defining a positional relationship between the discharge object and the liquid discharge head, and receiving the droplets discharged from the liquid discharge head, refer to col. 20, lines 8-15 (platen as indicated in line 15 is not shown in fig. 16),

wherein droplets are preliminarily discharged from the liquid discharge nozzle to the platen plate, refer to col. 20, lines 8-15 (previous discharge is a preliminary discharge, which is also known as: predischARGE or idle discharge).

Claim 14/1/6:

Matsui et al. further teach:

wherein the platen plate is formed such that the droplets preliminarily discharged from the liquid discharge nozzle flow out of the platen plate, refer to col. 20, lines 8-39. previous discharge hole 37 is a hole, so ink received during previous discharge process will flow out of the hole, which is in the platen to e.g., a waste ink tank.

Claim 15/5/6:

The liquid discharging apparatus according to claim 5 or Claim 6, wherein the platen plate is formed such that the droplets preliminarily discharged from the liquid discharge nozzle are forced out of the platen plate.

Rejection:

This claim is rejected on the basis as set forth for claim 14/1/6 discussed above. The droplets preliminarily discharged from the liquid discharge nozzle are forced out of the platen plate by gravitational force in this case.

Claim 26:

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A method for controlling a liquid discharging apparatus for discharging droplets from a liquid discharge nozzle to a discharge object to be discharged, the liquid discharging apparatus including a liquid discharge head having a liquid discharge surface provided with the liquid discharge nozzle, the liquid discharging apparatus being provided with a platen plate for supporting the discharge object, defining a positional relationship between the discharge object and the liquid discharge head, and receiving the droplets discharged from the liquid discharge head, the method comprising:

preliminarily discharging droplets from the liquid discharge nozzle to the platen plate.

Rejection:

This method claim corresponds to the apparatus claim 1, and the step in this method claim is deemed to be made inherent by the functions of the structure in the combination discussed above for claim 1.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

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the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 2 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui et al. in view of Shimamura et al. (US Pat. No. 5,406,317).

In regard to:

Claim 2:

Matsui et al. teach previous discharge such as shown in fig. 7 after a wiping action.

Therefore the device of Matsui et al. **DIFFERS** from claim 2 in that it does not teach:

discharge controlling means for controlling a discharge operation of discharging the droplets from the liquid discharge nozzle in the liquid discharge surface, wherein, at a time when an operation of discharging liquid to the discharge object **begins**, preliminary discharge is performed to the platen plate.

To this issue, Shimamura et al. teach in their fig. 15 a control scheme, in which step S3 indicates a preliminary ejection is performed at the time a print command is received by the ink jet printer, refer to col. 12, line 67 to col. 13, line 15.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to include a preliminary ejection at the time when a printing operation is about to start as taught by Shimamura et al. for the purpose of providing a liable head after a long time has passed since the previous printing.

Claim 27:

The method for controlling the liquid discharging apparatus according to claim 26, the method further comprising performing preliminary discharge to the platen plate at a time when an operation of discharging liquid to the discharge object begins.

Rejection:

This method claim corresponds to the apparatus claim 2, and the step in this method claim is deemed to be made obvious by the functions of the structure in the combination discussed above for claim 2.

8. Claims 3 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui et al. in view of Koitabashi et al. (US Pat. No. 5,491,271).

In regard to:

Claim 3:

The device of Matsui et al. **DIFFERS** from claim 3 in that it does not teach:
discharge controlling means for controlling a discharge operation of discharging the droplets from the liquid discharge nozzle in the liquid discharge surface, wherein, at a time when an operation of discharging liquid to the discharge object **ends**, preliminary discharge is performed to the platen plate.

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To this issue, Koitabashi et al. teach a “recording ending process” in step SD in fig. 17, and an “idle ejection” was executed in step SD11 in the recording ending process in fig. 18D, refer to col. 16, lines 52-63 and col. 15, lines 14-53, and also col. 18, lines 39-42.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to include an idle ejection in a “recording ending process” after a wiping operation as taught by Koitabashi et al. for the purpose of preventing mixture of different color of ink materials attribute to the wiping operation for plural recording head with a single blade.

Claim 28:

The method for controlling the liquid discharging apparatus according to claim 26, the method further comprising performing preliminary discharge to the platen plate at a time when an operation of discharging liquid to the discharge object ends.

Rejection:

This method claim corresponds to the apparatus claim 3, and the step in this method claim is deemed to be made obvious by the functions of the structure in the combination discussed above for claim 3.

9. Claims 4 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui et al. in view of Martinson et al. (US Pat. No. 5,793,388).

In regard to:

Claim 4:

The device of Matsui et al. **DIFFERS** from claim 4 in that it does not teach:

discharge controlling means for controlling a discharge operation of discharging the droplets from the liquid discharge nozzle in the liquid discharge surface, wherein, after an operation of discharging liquid to the discharge object begins, every time the **number of printed pages** of the discharge object reaches **a predetermined number**, the operation of discharging liquid is temporarily stopped, and droplets are preliminarily discharged from the liquid discharge nozzle to the platen plate by control of the discharge controlling means.

To this issue, Martinson et al. teach a control scheme in fig. 13A and 13B, in which if a page count is greater than page counter threshold at step 327, then a step of "perform print time print head service" will be perform at step 333. And fig. 16 steps 415 and 419 a spitting operation is performed, refer to col. 9, lines 52-59 (preliminary ejection/discharge, pre-discharge/ejection, previous discharge, idle ejection/discharge and spitting all mean discharging/ejecting ink that has not to do with printing/recording. Such discharging/ejecting can be done either into a cap, or a spittoon, or a pad or a sheet or onto a platen having means for absorbing ink such as a porous material. So the carriage does not have to go back to the so-called Home Position (HP) to do this, the carriage can just do this by discharging ink onto the platen as in the case of Matsui et al. discussed in claim 1 above for saving time).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to include a page count as taught by Martinson et al.

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for the purpose of serving the print head after the number of page printed have been exceed a threshold so as to maintain a healthy ink jet head.

Claim 29:

The method for controlling the liquid discharging apparatus according to claim 26, the method further comprising temporarily stopping an operation of discharging liquid and preliminarily discharging droplets from the liquid discharge nozzle to the platen plate, every time the number of printed pages of the discharge object reaches a predetermined number, after the operation of discharging liquid to the discharge object begins.

Rejection:

This method claim corresponds to the apparatus claim 4, and the step in this method claim is deemed to be made obvious by the functions of the structure in the combination discussed above for claim 4.

10. Claims 5 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui et al. in view of Slade (US Pat. No. 5,850,237).

In regard to:

Claim 5:

The device of Matsui et al. **DIFFERS** from claim 4 in that it does not teach:
comprising discharge controlling means for controlling a discharge operation of discharging the droplets from the liquid discharge nozzle in the liquid discharge surface, wherein, after an operation of discharging liquid to the discharge object begins, every

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time a predetermined period of time elapses, the operation of discharging liquid is temporarily stopped, and droplets are preliminarily discharged from the liquid discharge nozzle to the platen plate by control of the discharge controlling means.

To this issue, Slade teaches in his fig. 6 a control scheme, in which, a purging operation is executed at step (136) after a printing operation is started at step (124) and a time period (T) is being exceeded at step (132), a purging operation is executed at step 136, refer to col. 11, line 45 and 50-51 (for definition of T), and col. 12, line 61 to col. 13, line 23 (a purging operation is also similar to a preliminary ejection, because purged ink either into a cap or otherwise has nothing to do with the printing/recording, it is also a service/maintenance/cleaning operation to an ink jet head).

Claim 30:

The method for controlling the liquid discharging apparatus according to claim 26, the method further comprising temporarily stopping an operation of discharging liquid and preliminarily discharging droplets from the liquid discharge nozzle to the platen plate, every time a predetermined period of time elapses, after the operation of discharging liquid to the discharge object begins.

Rejection:

This method claim corresponds to the apparatus claim 5, and the step in this method claim is deemed to be made obvious by the functions of the structure in the combination discussed above for claim 5.

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11. Claims 6, 9, 11, 12, 16, 17, 19, 20 and 24/16/17/19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al. (US Pat. No. 6,637,856) in view of Matsui et al. (US Pat. No. 5,896,143).

In regard to:

Claim 6:

Nishi et al. teach:

A liquid discharging apparatus for discharging droplets from a liquid discharge nozzle (refer to col. 6, lines 4-7) to a discharge object (refer to col. 5, line 54, a recording sheet) to be discharged, the liquid discharging apparatus including a liquid discharge head (4, fig. 2, col. 5, line 56, print head) having a liquid discharge surface (6, fig. 2, col. 6, lines 4-5) provided with the liquid discharge nozzle, the liquid discharging apparatus comprising:

a cleaning member (7, figs. 2, 4 and 5, col. 6, line 33) formed of an elastic material (refer to col. 7, lines 25-32) and having a cylindrical shape (see fig. 2 for shape, and col. 7, line 1);

moving means (head cap removal signal, refer to col. 12, lines 7-14) for causing relative movement between the cleaning member (7) and the liquid discharge surface (6) while an outer face of the cleaning member is in contact with the liquid discharge surface of the liquid discharge head, refer to col. 14, lines 1-16;

drive controlling means for controlling driving of the moving means, refer to col. 13, lines 34-35, a control circuit portion;

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discharge controlling means for controlling a discharge operation of discharging the droplets from the liquid discharge nozzle in the liquid discharge surface, refer to col. 13, lines 34-35, the control circuit portion, also refer to col. 5, lines 51-54; and col. 13, lines 24-27(note: the control circuit portion controls the on-off of selected electrothermal converters according to the print signal so as to form desired image on the recording sheet); and

a platen plate (33, figs. 20A and 20B, col. 16, lines 11-12) for supporting the discharge object (31, figs. 20A and 20B, col. 16, line 10), defining a positional relationship between the discharge object and the liquid discharge head, and receiving the droplets discharged from the liquid discharge head (note: droplets are discharged from nozzles of print head 1 toward the recording sheet 31, which is supported on top of the platen 33, therefore, the platen is receiving the droplets discharged from the liquid discharge head, however, those droplets are deposited on the recording sheet),

wherein liquid present in the liquid discharge nozzle is sucked by performing movement while the outer face of the cleaning member is in contact with the liquid discharge surface by driving of the moving means under control of the drive controlling means, and after the cleaning member has passed over the liquid discharge surface, droplets are preliminarily discharged from the liquid discharge nozzle to the platen plate by control of the discharge controlling means, refer to col. 11, line 63 to col. 12, line 3

The device of Nishi et al. **DIFFERS** from claim 6 in that it does not teach:

preliminarily discharged from the liquid discharge nozzle to the platen plate.

To this issue, Matsui et al. teach in their fig. 16a process of previous discharge into a platen, refer to col. 20, lines 12-15, and also refer to discussions to claim 1 above.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to include a previous discharge, which discharges ink toward the platen as taught by Matsui et al. for the purpose of saving time and the throughput can be increased by not returning the carriage back to the HP to perform the previous discharge process.

Claim 9:

Nishi et al. further teach:

wherein, after an operation of discharging liquid to the discharge object **begins**, every time the number of printed pages of the discharge object reaches a predetermined number, the operation of discharging liquid is temporarily stopped, and droplets are preliminarily discharged from the liquid discharge nozzle to the platen plate by control of the discharge controlling means, refer to col. 11, line 63 to col. 12, line 67. Note: col. 12, lines 52-53 indicates required number of pages is complete. Also, col. 12, lines 45-51 indicates wiping and preliminary are completed, and the situation is in fig. 12D, and one page of printing is complete under the situation of fig. 12D. So, based on the same token, the second page, the third page, etc. are done in the same fashion until the desired number of pages is completed, and a preliminary discharge is done for every page after its printing is done.

Claim 11:

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The liquid discharging apparatus according to claim 6, further comprising a cap member for accommodating the cleaning member therein and protecting the liquid discharge surface of the liquid discharge head, wherein the cap member is opened and closed by driving of the moving means, relative movement between the cleaning member and the liquid discharge surface while the outer face of the cleaning member is in contact with the liquid discharge surface of the liquid discharge head is caused as the cap member is opened, and, after the cleaning member has passed over the liquid discharge surface, droplets are preliminarily discharged from the liquid discharge nozzle to the platen plate by control of the discharge controlling means.

Rejection:

Refer to fig. 2 and 12A to 12F. The head cap is (5). Cleaning roller (7) is housed inside the head cap or the cap member accommodates the cleaning member therein. The opening and closing of the head cap is shown in fig. 12. Matsui et al. teach the previous discharge is done toward the platen.

Claim 12:

The liquid discharging apparatus according to claim 6, further comprising a cap member for accommodating the cleaning member therein and protecting the liquid discharge surface of the liquid discharge head, wherein the cap member temporarily closed is reopened and reclosed by driving of the moving means, relative movement between the cleaning member and the liquid discharge surface while the outer face of the cleaning member is in contact with the liquid discharge surface of the liquid discharge head is caused as the cap member is opened, and, after the cleaning

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member has passed over the liquid discharge surface, droplets are preliminarily discharged from the liquid discharge nozzle to the platen plate by control of the discharge controlling means.

Rejection:

Refer to Nishi et al.'s fig. 12. In which the cap is temporarily closed can be seen as in the state of figs. 12A and 12F. Reopen can be seen as in fig. 12B. Re-closed can be seen as in figs. 12E and 12F. Droplets are preliminarily discharged from the liquid discharge nozzle to the platen plate by control of the discharge controlling means after wiping can be found in col. 12, line 2+.

Claim 16:

A liquid discharging apparatus for discharging droplets from liquid discharge nozzles to a discharge object to be discharged, the liquid discharging apparatus including a liquid discharge head having a liquid discharge surface provided with rows of the liquid discharge nozzles for a plurality of colors, each row of the liquid discharge nozzles corresponding to one color, the liquid discharging apparatus comprising:

a cleaning member formed of an elastic material and having a cylindrical shape;

a cap member for accommodating the cleaning member therein and protecting the liquid discharge surface of the liquid discharge head;

cap opening and closing means for opening and closing the cap member and for, as the cap member is opened, causing relative movement between the cleaning member and the liquid discharge surface in a direction perpendicular to the rows of the

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liquid discharge nozzles for the colors while an outer face of the cleaning member is in contact with the liquid discharge surface of the liquid discharge head;

drive controlling means for controlling driving of the cap opening and closing means;

discharge controlling means for controlling a discharge operation of discharging the droplets from the liquid discharge nozzles of the liquid discharge surface; and

a platen plate for supporting the discharge object, defining a positional relationship between the discharge object and the liquid discharge head, and receiving the droplets discharged from the liquid discharge head,

wherein, at a time when an operation of discharging liquid to the discharge object **begins**, the cap member is opened by driving of the cap opening and closing means under control of the drive controlling means, liquid present in the liquid discharge nozzles is sucked by performing movement while the outer face of the cleaning member is in contact with the liquid discharge surface, and, after the cleaning member has passed over the liquid discharge surface, droplets are preliminarily discharged from the liquid discharge nozzles to the platen plate by control of the discharge controlling means.

Rejection:

Subject matters of: (1) a cleaning member; (2) a cap member for accommodating the cleaning member therein; (3) cap opening and closing means; (4) drive controlling means; (5) discharge controlling means; and (6) a platen plate are the same as those in claim 6 and is rejected on the basis as set forth for claim 6 discussed above. For cap

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opening and closing means, please refer to Nishi et al.'s col. 12, line 9-10 for head cap removal signal and lines 53-54 for head cap placing signal. Regarding to a preliminary discharge after wiping, please refer to col. 11, line 63 to col. 12, line 3. For color printing, please refer to fig. 2, the color ink are: K, C, M and Y. For preliminary discharge to platen, please refer to Matsui et al.'s fig. 16.

Claim 17:

A liquid discharging apparatus for discharging droplets from liquid discharge nozzles to a discharge object to be discharged, the liquid discharging apparatus including a liquid discharge head having a liquid discharge surface provided with rows of the liquid discharge nozzles for a plurality of colors, each row of the liquid discharge nozzles corresponding to one color, the liquid discharging apparatus comprising:

a cleaning member formed of an elastic material and having a cylindrical shape;

a cap member for accommodating the cleaning member therein and protecting the liquid discharge surface of the liquid discharge head;

cap opening and closing means for opening and closing the cap member and for, as the cap member is opened, causing relative movement between the cleaning member and the liquid discharge surface in a direction perpendicular to the rows of the liquid discharge nozzles for the colors while an outer face of the cleaning member is in contact with the liquid discharge surface of the liquid discharge head;

drive controlling means for controlling driving of the cap opening and closing means;

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discharge controlling means for controlling a discharge operation of discharging the droplets from the liquid discharge nozzles of the liquid discharge surface; and

a platen plate for supporting the discharge object, defining a positional relationship between the discharge object and the liquid discharge head, and receiving the droplets discharged from the liquid discharge head,

wherein, at a time when an operation of discharging liquid to the discharge object **ends**, the cap member **temporarily closed** is **reopened** and **reclosed** by driving of the moving means under control of the drive controlling means, liquid present in the liquid discharge nozzles is sucked by performing movement while the outer face of the i0 cleaning member is in contact with the liquid discharge surface, and, after the cleaning member has passed over the liquid discharge surface, droplets are preliminarily discharged from the liquid discharge nozzles to the platen plate by control of the discharge controlling means.

Rejection:

Subject matters of: (1) a cleaning member; (2) a cap member for accommodating the cleaning member therein; (3) cap opening and closing means; (4) drive controlling means; (5) discharge controlling means; and (6) a platen plate are the same as those in claim 16 and is rejected on the basis as set forth for claim 16 discussed above. As to the hi-lighted portions in the “wherein” paragraph above, one page finished printing or at the **end** of an operation of discharging liquid to the discharge object, please refer to col. 12, lines 45-53. In line 53 the word “completed” equivalent to “**ends**” in this claim. The cap member **temporarily closed** is shown in either fig. 12A or 12F, the initial state.

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Reopened after temporarily closed is shown in fig. 12B to fig. 12D, and **reclosed** is shown in fig. 12E and 12F. For preliminary discharge to platen, please refer to Matsui et al.'s fig. 16.

Claim 19:

A liquid discharging apparatus for discharging droplets from liquid discharge nozzles to a discharge object to be discharged, the liquid discharging apparatus including a liquid discharge head having a liquid discharge surface provided with rows of the liquid discharge nozzles for a plurality of colors, each row of the liquid discharge nozzles corresponding to one color, the liquid discharging apparatus comprising:

a cleaning member formed of an elastic material and having a cylindrical shape;

a cap member for accommodating the cleaning member therein and protecting the liquid discharge surface of the liquid discharge head;

cap opening and closing means for opening and closing the cap member and for, as the cap member is opened, causing relative movement between the cleaning member and the liquid discharge surface in a direction perpendicular to the rows of the liquid discharge nozzles for the colors while an outer face of the cleaning member is in contact with the liquid discharge surface of the liquid discharge head;

drive controlling means for controlling driving of the cap opening and closing means;

discharge controlling means for controlling a discharge operation of discharging the droplets from the liquid discharge nozzles of the liquid discharge surface; and

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a platen plate for supporting the discharge object, defining a positional relationship between the discharge object and the liquid discharge head, and receiving the droplets discharged from the liquid discharge head,

wherein, after an operation of discharging liquid to the discharge object begins, every time the number of printed pages of the discharge object reaches a predetermined number, the operation of discharging liquid is temporarily stopped, the cap member is reopened after the cap member is temporarily closed by driving of the cap opening and closing means under control of the drive controlling means, liquid present in the liquid discharge nozzles is sucked by performing movement while the outer face of the cleaning member is in contact with the liquid discharge surface as the cap member is reopened, and, after the cleaning member has passed over the liquid discharge surface, droplets are preliminarily discharged from the liquid discharge nozzles to the platen plate by control of the discharge controlling means.

Rejection:

Subject matters of: (1) a cleaning member; (2) a cap member for accommodating the cleaning member therein; (3) cap opening and closing means; (4) drive controlling means; (5) discharge controlling means; and (6) a platen plate are the same as those in claim 16 and is rejected on the basis as set forth for claim 16 discussed above. As to the recitation in the “wherein” paragraph, “after an operation of discharging liquid to the discharge object begins, every time the number of printed pages of the discharge object reaches a predetermined number” corresponds to that in claim 9 and is rejected on the basis as set forth for claim 9 discussed above. Or, refer to Nishi et al.’s col. 12, line 52+.

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Fig. 12F can be seen as the cap is temporarily closed after a certain number of page have been printed. Reopen can be seen as in fig. 12B.

Claim 20:

A liquid discharging apparatus for discharging droplets from liquid discharge nozzles to a discharge object to be discharged, the liquid discharging apparatus including a liquid discharge head having a liquid discharge surface provided with rows of the liquid discharge nozzles for a plurality of colors, each row of the liquid discharge nozzles corresponding to one color, the liquid discharging apparatus comprising:

a cleaning member formed of an elastic material and having a cylindrical shape;

a cap member for accommodating the cleaning member therein and protecting the liquid discharge surface of the liquid discharge head;

cap opening and closing means for opening and closing the cap member and for, as the cap member is closed, causing relative movement between the cleaning member and the liquid discharge surface in a direction perpendicular to the rows of the liquid discharge nozzles for the colors while an outer face of the cleaning member is in contact with the liquid discharge surface of the liquid discharge head;

drive controlling means for controlling driving of the cap opening and closing means;

discharge controlling means for controlling a discharge operation of discharging the droplets from the liquid discharge nozzles of the liquid discharge surface; and

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a platen plate for supporting the discharge object, defining a positional relationship between the discharge object and the liquid discharge head, and receiving the droplets discharged from the liquid discharge head,

wherein, after an operation of discharging liquid to the discharge object begins, every time the number of printed pages of the discharge object reaches a predetermined number, the operation of discharging liquid is temporarily stopped, the cap member is temporarily closed by driving of the cap opening and closing means under control of the drive controlling means, the cap member is reopened after liquid present in the liquid discharge nozzles is sucked by performing movement while the outer face of the cleaning member is in contact with the liquid discharge surface, and, after the cleaning member has passed over the liquid discharge surface, droplets are preliminarily discharged from the liquid discharge nozzles to the platen plate by control of the discharge controlling means.

Rejection:

Subject matters of: (1) a cleaning member; (2) a cap member for accommodating the cleaning member therein; (3) cap opening and closing means; (4) drive controlling means; (5) discharge controlling means; and (6) a platen plate are the same as those in claim 16 and is rejected on the basis as set forth for claim 16 discussed above. As to the recitation in the “wherein” paragraph, the situations are the same as those in claim 19 and is rejected on the basis as set forth for claim 19 discussed above. In this claim, the cap member is temporarily closed every time the number of printed pages of the discharge object reaches a predetermined number is the situation shown in Nishi et al.’s

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figs 12A or 12F. Then the cap is reopen. This situation is shown in fig. 12B. Wiping is done in both cap open and close processes.

Claim 24/16/17/19-22

The liquid discharging apparatus according to any one of claims 16, 17, and 19 to 22, wherein, after the cleaning member has passed over the rows of the liquid discharge nozzles corresponding to the colors, droplets corresponding to the plurality of colors are preliminarily discharged from the liquid discharge nozzles in a simultaneous manner by control of the discharge controlling means.

Rejection:

Refer to Nishi et al.'s col. 9, lines 1-24.

12. Claims 7, 8, 18 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al. in view of Matsui et al. as applied to claim 6 above, and further in view of Koitabashi et al. (US Pat. No. 5,495,271).

In regard to:

Claim 7:

The device of Nishi et al. as modified in view of Matsui et al. **DIFFERS** from claim 7 in that it does not teach:

wherein, at a time when an operation of discharging liquid to the discharge object begins, liquid present in the liquid discharge nozzle is sucked by performing movement while the outer face of the cleaning member is in contact with the liquid discharge surface by driving of the moving means under control of the drive controlling means,

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and, after the cleaning member has passed over the liquid discharge surface, droplets are preliminarily discharged from the liquid discharge nozzle to the platen plate by control of the discharge controlling means.

This claim is: (1) printing begins→ (2) wiping---> (3) preliminary discharge. To this issue, Koitabashi et al. teach in their fig. 17 a “power on” control scheme. In fig. 17, If “yes” is answered to step S1 (recording instruction received?), then before “plural lines are recorded” in step S3 was executed, a preparation step, SB was executed. Then refer to fig. 18B. In fig. 18B, an idle ejection, which is equivalent to a preliminary discharge was performed after a wiping operation executed at step SB1, refer to col. 16, lines 29-40.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to include an idle ejection after a wiping operation as taught by Koitabashi et al. for the purpose of preventing mixture of different color of ink materials attribute to the wiping operation for plural recording head with a single blade.

Claim 8:

The liquid discharging apparatus according to claim 6, wherein, at a time when an operation of discharging liquid to the discharge object **ends**, liquid present in the liquid discharge nozzle is sucked by performing movement while the outer face of the cleaning member is in contact with the liquid discharge surface by driving of the moving means under control of the drive controlling means, and, when the cleaning member moves the liquid discharge surface, droplets are preliminarily discharged from the liquid discharge nozzle to the platen plate by control of the discharge controlling means.

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Rejection:

Please refer to Koitabashi et al.'s fig. 18D, in which, an idle ejection was performed at step (SD 11) in a "recording ending process", in which a wiping action is performed in step (SD 7), which was done before the idle ejection.

Claim 18:

A liquid discharging apparatus for discharging droplets from liquid discharge nozzles to a discharge object to be discharged, the liquid discharging apparatus including a liquid discharge head having a liquid discharge surface provided with rows of the liquid discharge nozzles for a plurality of colors, each row of the liquid discharge nozzles corresponding to one color, the liquid discharging apparatus comprising:

a cleaning member formed of an elastic material and having a cylindrical shape;

a cap member for accommodating the cleaning member therein and protecting the liquid discharge surface of the liquid discharge head;

cap opening and closing means for opening and closing the cap member and for, as the cap member is closed, causing relative movement between the cleaning member and the liquid discharge surface in a direction perpendicular to the rows of the liquid discharge nozzles for the colors while an outer face of the cleaning member is in contact with the liquid discharge surface of the liquid discharge head;

drive controlling means for controlling driving of the cap opening and closing means;

discharge controlling means for controlling a discharge operation of discharging the droplets from the liquid discharge nozzles of the liquid discharge surface; and

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a platen plate for supporting the discharge object, defining a positional relationship between the discharge object and the liquid discharge head, and receiving the droplets discharged from the liquid discharge head,

wherein, at a time when an operation of discharging liquid to the discharge object **ends, before the cap member is closed** by driving of the cap opening and closing means under control of the drive controlling means and movement while the outer face of the cleaning member is in contact with the liquid discharge surface is caused, droplets are preliminarily discharged from the liquid discharge nozzles to the platen plate.

Rejection:

Subject matters of: (1) a cleaning member; (2) a cap member for accommodating the cleaning member therein; (3) cap opening and closing means; (4) drive controlling means; (5) discharge controlling means; and (6) a platen plate are the same as those in claim 17 and is rejected on the basis as set forth for claim 17 discussed above. As to the recitation in the wherein paragraph, it is a situation that a printing operation is finished, and the cap is not close yet (as the recitation says: before the cap member is closed by....). At this moment, a preliminary discharge is conducted. That is equivalent to a "idle ejection" in a "recording ending process" as taught by Koitabashi et al. Please refer to the rejection discussed for claim 7 above.

Claim 25:

The liquid discharging apparatus according to claim 18, wherein, before the cap member is closed by driving of the cap opening and closing means by control of the

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drive 25 controlling means and movement while the outer face of the cleaning member is in contact with the liquid discharge surface is caused, in the order in which the cleaning member passes over the rows of the liquid discharge nozzles corresponding to the colors, droplets are preliminarily discharged from the liquid discharge nozzles.

Rejection:

Refer to Nishi et al.'s col. 9, lines 1-24. This claim corresponds to "after" the cap starts to move (see particularly col. 9, lines 17-22).

13. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al. in view of Matsui et al. as applied to claim 6 above, and further in view of Slade (US Pat. No. 5,850,237).

The liquid discharging apparatus according to claim 6, further comprising discharge controlling means for controlling a discharge operation of discharging the droplets from the liquid discharge nozzle in the liquid discharge surface, wherein, after an operation of discharging liquid to the discharge object **begins**, every time a predetermined period of time elapses, the operation of discharging liquid is temporarily stopped, and droplets are preliminarily discharged from the liquid discharge nozzle to the platen plate by control of the discharge controlling means.

Rejection:

Please refer to the rejection discussed for claim 5 above.

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14. Claims 21, 22 and 23/16/17/19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al. in view of Matsui et al. and Slade.

In regard to:

Claim 21:

A liquid discharging apparatus for discharging droplets from liquid discharge nozzles to a discharge object to be discharged, the liquid discharging apparatus including a liquid discharge head having a liquid discharge surface provided with rows of the liquid discharge nozzles for a plurality of colors, each row of the liquid discharge nozzles corresponding to one color, the liquid discharging 25 apparatus comprising:

a cleaning member formed of an elastic material and having a cylindrical shape;

a cap member for accommodating the cleaning member therein and protecting the liquid discharge surface of the liquid discharge head;

cap opening and closing means for opening and closing the cap member and for, as the cap member is opened, causing relative movement between the cleaning member and the liquid discharge surface in a direction perpendicular to the rows of the liquid discharge nozzles for the colors while an outer face of the cleaning member is in contact with the liquid discharge surface of the liquid discharge head;

drive controlling means for controlling driving of the cap opening and closing means;

discharge controlling means for controlling a discharge operation of discharging the droplets from the liquid discharge nozzles of the liquid discharge surface; and

a platen plate for supporting the discharge object, defining a positional relationship between the discharge object and the liquid discharge head, and receiving the droplets discharged from the liquid discharge head,

wherein, after an operation of discharging liquid to the discharge object begins, every time a predetermined period of time elapses, the operation of discharging liquid is temporarily stopped, the cap member is reopened after the cap member is temporarily closed by driving of the cap opening and closing means under control of the drive controlling means, liquid present in the liquid discharge nozzles is sucked by performing movement while the outer face of the cleaning member is in contact with the liquid discharge surface as the cap member is reopened, and, after the cleaning member has passed over the liquid discharge surface, droplets are preliminarily discharged from the liquid discharge nozzles to the platen plate by control of the discharge controlling means.

Rejection:

Subject matters of: (1) a cleaning member; (2) a cap member for accommodating the cleaning member therein; (3) cap opening and closing means; (4) drive controlling means; (5) discharge controlling means; and (6) a platen plate are the same as those in claim 17 and is rejected on the basis as set forth for claim 17 discussed above. As to the recitation in the wherein paragraph, it is a situation that a predetermined time has been elapsed since the beginning of the printing that is equivalent to that in claim 10, and is rejected on the basis as set forth for claim 10 discussed above. Also, in this case, the cap reopen after it was temporarily closed is indicated by Nishi et al.'s figs. 12A or

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12F and 12B. Slade teaches purging operation after timer exceeds time T (Slade's fig. 6). However, as far as Nishi et al. a predetermined number of page has been finished printing is concerned, a time period corresponds to the duration of finishing the predetermined number of pages can also be considered as "a predetermined period of time elapses" in this claim. In any case, when the situation is shown in Nishi et al.'s fig. 12D, preliminary discharge has been executed.

Claim 22:

A liquid discharging apparatus for discharging droplets from liquid discharge nozzles to a discharge object to be discharged, the liquid discharging apparatus including a liquid discharge head having a liquid discharge surface provided with rows of the liquid discharge nozzles for a plurality of colors, each row of the liquid discharge nozzles corresponding to one color, the liquid discharging apparatus comprising:

a cleaning member formed of an elastic material and having a cylindrical shape;

a cap member for accommodating the cleaning member therein and protecting the liquid discharge surface of the liquid discharge head;

cap opening and closing means for opening and closing the cap member and for, as the cap member is closed, causing relative movement between the cleaning member and the liquid discharge surface in a direction perpendicular to the rows of the liquid discharge nozzles for the colors while an outer face of the cleaning member is in contact with the liquid discharge surface of the liquid discharge head;

drive controlling means for controlling driving of the cap opening and closing means;

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discharge controlling means for controlling a discharge operation of discharging the droplets from the liquid discharge nozzles of the liquid discharge surface; and

a platen plate for supporting the discharge object, defining a positional relationship between the discharge object and the liquid discharge head, and receiving the droplets discharged from the liquid discharge head,

wherein, after an operation of discharging liquid to the discharge object begins, every time a predetermined period of time elapses, the operation of discharging liquid is temporarily stopped, the cap member is temporarily closed by driving of the cap opening and closing means under control of the drive controlling means, the cap member is reopened after liquid present in the liquid discharge nozzles is sucked by performing movement while the outer face of the cleaning member is in contact with the liquid discharge surface, and, after the cleaning member has passed over the liquid discharge surface, droplets are preliminarily discharged from the liquid discharge nozzles to the platen plate by control of the discharge controlling means.

Rejection:

Recitations of this claim are the same as those in claim 21, and is rejected on the basis as set forth for claim 21 discussed above.

Claim 23/16/17/19-22:

The liquid discharging apparatus according to any one of claims 16, 17, and 19 to 22, wherein, in the order in which the cleaning member has passed over the rows of the liquid discharge nozzles corresponding to the colors, droplets are preliminarily

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discharged from the liquid discharge nozzles by control of the discharge controlling means.

Rejection:

Refer to Nishi et al.'s col. 12, line 7+.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to shih-wen hsieh whose telephone number is 571-272-2256. The examiner can normally be reached on 9/5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on 571-272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/shih-wen hsieh/

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Primary Examiner, Art Unit 2861

March 31, 2009